

U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF SOILS—MILTON WHITNEY, Chief.  
IN COOPERATION WITH THE STATE OF MISSISSIPPI, THEODORE G. BILBO,  
GOVERNOR; E. N. LOWE, DIRECTOR, STATE GEOLOGICAL SURVEY.

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# SOIL SURVEY OF COVINGTON COUNTY, MISSISSIPPI.

BY

E. MALCOLM JONES, OF THE MISSISSIPPI GEOLOGICAL SURVEY, IN  
CHARGE, AND A. T. SWEET, OF THE U. S. DEPARTMENT OF AGRICULTURE.

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HUGH H. BENNETT, INSPECTOR, SOUTHERN DIVISION.

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[Advance Sheets—Field Operations of the Bureau of Soils, 1917.]



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.

1919

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## LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF SOILS,

*Washington, D. C., June 12, 1918.*

SIR: I have the honor to transmit herewith the manuscript report and map covering the survey of Covington County, Miss., and to recommend that they be published as advance sheets of Field Operations of the Bureau of Soils, 1917, as authorized by law.

This work was done in cooperation with the Mississippi State Geological Survey.

Respectfully,

MILTON WHITNEY,  
*Chief of Bureau.*

Hon. D. F. HOUSTON,  
*Secretary of Agriculture.*

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## MAP.

Soil map, Covington County sheet, Mississippi



# SOIL SURVEY OF COVINGTON COUNTY MISSISSIPPI.

By E. MALCOLM JONES, of the Mississippi Geological Survey, In Charge, and A. T. SWEET, of the U. S. Department of Agriculture.—Area Inspected by HUGH H. BENNETT.

## DESCRIPTION OF THE AREA.

Covington County lies in the south-central part of Mississippi, about midway between Jackson and Gulfport and about 100 miles northeast of New Orleans. Simpson and Smith Counties bound it on the north, Jones County on the east, Forrest and Lamar Counties on the south, and Jefferson Davis County on the west. Bowie Creek forms the boundary for a considerable distance on the southwest and the old Choctaw Boundary forms the north county line. The county has a maximum length along the eastern boundary of nearly 25 miles. In the northern part the width, from east to west, is 21 miles, but in the southern part only 11 miles. The county has an area of 410 square miles, or 262,400 acres.

Covington County lies entirely within the Coastal Plain. It consists of undulating or gently rolling to hilly uplands traversed by broad stream valleys. The valley of Okatoma Creek divides the county into two nearly equal upland regions, one of these extending to the valleys of Leaf River and Oakohay Creek in the northeastern part, and the other to the valley of Bowie Creek in the southwestern part. South of Bowie Creek the county includes a small part of a third upland area. Practically all the upland is cultivable, but much of it requires terracing to prevent erosion.

The bottom lands vary in width from one-half to almost 1 mile along the larger streams and from a few rods to about one-fourth mile along the smaller ones. In many places the larger streams flow in deep channels and do not overflow their flood plains except during periods of unusually high water. In addition to these low terraces there are distinct higher terraces or benches which are never overflowed and which in most places are separated from the lower terraces or from the first bottoms by slopes ranging from 20 to more than 40 feet in height. The town of Seminary is situated on a bench of this kind and another occupies the point of the ridge which separates Bowie Creek from Okatoma Creek.

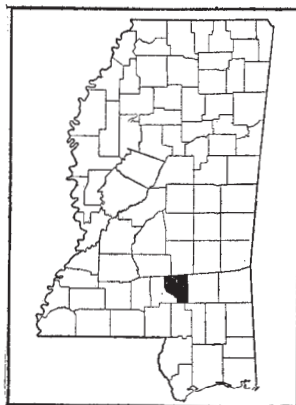


FIG. 1.—Sketch map showing location of the Covington County area, Mississippi.

The average elevation of the higher upland is probably slightly more than 400 feet above sea level, and that of the larger valleys about 200 feet. The prevailing slope is toward the south and east.

Covington County is drained by Leaf River, which flows for a short distance across the northeast corner. Okatoma Creek flows from northwest to southeast through the central part of the county, and Bowie Creek, after forming the southwest boundary for a considerable distance, crosses the extreme southern part. These two streams unite outside the southeast corner of the county to form Bowie Creek which empties into Leaf River near Hattiesburg in Forrest County. All these streams have important tributaries and numerous branches reach into practically every part of the county. Nearly every farm is connected with one or more drainage ways, and as a result of the intricate drainage system many fields are small and irregular. With the exception of some small areas which usually occur on the crests of divides, the greater part of the upland has good surface drainage. On the steeper slopes near the streams the surface drainage is in places excessive, but the rise from the valleys to the adjacent upland rarely exceeds 150 feet, and in many places the slopes are quite gradual. Along the outer margins of the larger stream valleys there are considerable areas of poorly drained land. The streams are in most places deep, narrow, and swift flowing. Scattered throughout the county, especially in the eastern part, are numerous small springs, which furnish a constant flow of water to the smaller streams. Water power has been developed in a small way for grist mills and sawmills. In the early days the people depended altogether upon water power to operate mills.

Covington County was organized in 1819. The first settlements in this region were made more than a century ago, the settlers coming principally from States to the east and northeast. About 1820 there was a large immigration from South Carolina, and a large proportion of the present population consists of descendants of these early settlers. With the development of lumbering many settlers have come in more recently, and the population has become more cosmopolitan. The population at present is all classed as rural, there being no town in the county with a population of 2,500. In 1910 the total population was 14,328. There has been a slight immigration of farmers in the last few years from the north and east, and a considerable number of foreigners, principally Italians, have come in, attracted in part by the strawberry-growing industry. Few, if any, Italians own land in the county; they are employed either as labor on the strawberry farms or as share croppers.

Collins is the largest town and the county seat. Until recently Collins was an important lumber town and it grew rapidly, the population in 1910 being 2,581. With the exhaustion of the lumber sup-



ply and the closing of some of the large lumber mills the population has decreased, and at present is estimated as 1,500. The town now has one large lumber mill, a cold-storage and packing plant, bottling plant, pickle factory, and other important industries. Mount Olive, Seminary, and Sanford are towns of considerable importance. At Arbo, Ora, and Kola there are large lumber mills. All these towns are on the Gulf & Ship Island Railroad. This line crosses the county from northwest to southeast, giving connection with the Illinois Central at Jackson, with the Mississippi Central and the New Orleans & Northeastern at Hattiesburg, and with the Louisville & Nashville at Gulfport.

Most of the public roads are graded, and a few of the most important are surfaced with gravel. There is an abundance of good road-building material in the form of gravelly clay throughout the county. (See Pl. I, fig. 1.) The towns have telephone communication, but there are few rural telephone lines. Rural mail delivery service reaches the greater part of the county.

The school system has improved rapidly in recent years, and good schools are maintained in every section. Before 1912 the county did not have a consolidated school; at present one-half its area is in seven consolidated districts, with a total of 1,800 to 2,000 children in attendance. Home science, agriculture, and manual training are taught. Most of these schools have demonstration farms, of an average size of about 20 acres.

Lumber and crossties from this region are shipped to northern and eastern markets and to Gulf Coast points. Pine for a creosoting plant is shipped in large quantities to Gulfport. Turpentine camps are located in all parts of the county. The largest is situated southwest of Gilmore Church.

Hattiesburg and Jackson are the principal local markets for the farm products. Strawberries in carload lots are shipped to northern and eastern markets.

#### CLIMATE.

The climate of Covington County is characteristic of much of the Gulf Coast region, the extremes of both summer and winter being tempered by proximity of the Gulf waters. This is especially noticeable in the summer, when winds from the south are often delightfully cool.

The accompanying table, compiled from the records of the Weather Bureau station at Hattiesburg, in Forrest County, gives the more important climatic data. The mean annual temperature is approximately 67° F., which is also practically the mean temperature for both spring and fall. The mean temperature for the winter is 51° and for the summer 82°.

The mean annual precipitation is 55.77 inches. The heaviest precipitation occurs in the summer, the average for this season being 17.25 inches. The least rainfall occurs in the fall, the average being only 9.24 inches. The average for the winter is 15.39 inches and for the spring 13.89 inches.

Killing frost has been recorded at Hattiesburg as late in the spring as April 10 and as early in the fall as October 21. The average date of the last killing frost in the spring is March 14 and that of the first in the fall November 8, giving a growing season of 239 days. This is sufficiently long for the growing of two crops of certain kinds on the same land in one season. A crop of oats may be cut and the land immediately put into cowpeas, sorghum, sweet potatoes, or even corn. Lespedeza sown with oats makes a second crop after the oats are cut. Early potatoes may be followed the same season by almost any crop except cotton. The same is true of strawberries after the last crop. Watermelons may be followed by cowpeas, and there are numerous other combinations which can be worked out.

Winter gardens of collards, cabbage, onions, and other hardy vegetables are grown in December and January. Peas, radishes, lettuce, potatoes, and strawberries are usually ready between the last of March and the middle of April. Oats are harvested early in May. Watermelons are ready for market about the last of June and sweet potatoes are ready for use in July.

The table below, giving the normal monthly, seasonal, and annual temperature and precipitation, is compiled from the records of the Weather Bureau station at Hattiesburg, in Forrest County. This station is at an elevation of 189 feet. The data are believed to indicate closely the climatic conditions in Covington County.

*Normal monthly, seasonal, and annual temperature and precipitation at Hattiesburg, Forrest County.*

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1894).	Total amount for the wettest year (1907).
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	51.1	85	13	4.52	4.78	5.30
January.....	49.8	84	15	4.99	3.14	2.04
February.....	52.0	86	-1	5.88	5.92	2.94
Winter.....	51.0	86	-1	15.39	13.84	10.28
March.....	61.2	91	23	4.92	5.07	3.68
April.....	65.7	93	31	4.44	2.55	4.82
May.....	74.1	102	39	4.63	2.50	13.92
Spring.....	66.9	102	23	13.89	10.12	22.42

*Normal monthly, seasonal, and annual temperature and precipitation at Hattiesburg, Forrest County—Continued.*

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1894).	Total amount for the wettest year (1907).
	° F.	° E.	° F.	Inches.	Inches.	Inches.
June.....	80.7	106	50	5.36	1.65	4.34
July.....	82.2	103	55	6.68	7.46	13.16
August.....	82.2	105	55	5.21	6.43	4.22
Summer.....	81.7	106	50	17.25	15.54	21.72
September.....	77.5	101	40	4.29	2.49	8.48
October.....	65.9	98	28	1.84	.30	2.20
November.....	57.6	88	21	3.11	.97	8.24
Fall.....	67.0	101	21	9.24	3.76	18.92
Year.....	66.7	106	-1	55.77	43.26	73.34

#### AGRICULTURE.

Much of the uplands of Covington County originally supported a heavy growth of longleaf pine. On the red ridge lands there was also large white oak, red oak, and dogwood, and some shortleaf pine timber. Black hickory, sweet and black gum, persimmon, wild cherry, post oak, blackjack oak, and numerous other trees and shrubs grew in other places in the uplands. In the stream bottoms the growth was principally shortleaf pine, gum, bay, magnolia, ash, and maple, with heavy growths of vines and shrubs. Before the timber was cut there was little undergrowth in the uplands, but cut-over areas soon support a dense growth of blackjack oak, post oak, and runner oak, with scattered refuse pine and oak and some second-growth pine; there are numerous fallen trunks and logs and a heavy growth of small oak.

In 1909 less than one-third of the total area of the county was improved land, and probably not over one-fourth is under cultivation at the present time. The remainder is practically all cut-over land. The cost of putting such land under cultivation ranges from about \$3 to \$5 an acre. This includes removing the fallen timber, cutting and removing small trees and undergrowth, and girdling the large standing timber. Removing all the standing timber and the stumps add about \$10 to \$12 an acre to the cost of clearing. The greater part of the land is cultivated at first without removing the stumps.

The early settlers in Covington County, as in other parts of southern Mississippi, settled along the larger streams and cultivated parts

of the first bottoms and adjacent bench lands. Nearly all the first-bottom land along Bowie and Terrible Creeks was under cultivation before the Civil War. Since the war this has never been in cultivation, and most of it is covered at present with forest. The principal crops grown were corn, cotton, sugar cane, sweet potatoes, and tobacco, all which were produced almost exclusively for home use. Hogs, cattle, and sheep were raised extensively on the open range and constituted the principal source of income. Stock was sold to drovers who went through the county or it was driven by the farmers to market at Mobile. No fertilizers were used on the bottom lands, but the uplands were often enriched by "cowpenning." The pen was usually changed about three times during the season. The first pen was plowed during the early winter and put into winter garden. The second pen was used for spring garden, sugar cane, sweet potatoes, and early corn. The third pen was used for corn and cotton.

The following table, compiled from the census, shows the relative importance of the various crops in the years 1879, 1889, 1899, and 1909:

*Acreage and production of principal crops.*

	1879		1889		1899		1909.	
	<i>Acres.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Bushels.</i>
Corn.....	10,682	115,088	16,005	213,085	25,385	331,830	15,935	208,266
Oats.....	3,553	32,215	3,199	28,795	1,850	12,380	2,523	28,356
Rice.....	118	59,902	22	7,280	23	7,760	1	19
Cowpeas.....		17,299		2,562	1,284	8,802	2,030	5,284
Beans.....		181			15	194	4	50
Potatoes.....		1,392	10	882	151	7,624	63	4,918
Sweet potatoes.....	568	50,575	591	42,416	435	30,954	922	87,731
		<i>Pounds.</i>		<i>Pounds.</i>		<i>Pounds.</i>		<i>Pounds.</i>
Tobacco.....	13	4,743		120		180		360
		<i>Bales.</i>		<i>Bales.</i>		<i>Bales.</i>		<i>Bales.</i>
Cotton.....	6,968	2,071	14,712	6,357	17,928	7,320	18,394	7,838
		<i>Gallons.</i>		<i>Gallons.</i>		<i>Gallons.</i>		<i>Tons.</i>
Sugar cane.....	161	21,108		38,359	293	29,652	409	4,191
Sorghum.....		283	2	52	3	255	6	40
				<i>Bushels.</i>		<i>Bushels.</i>		<i>Bushels.</i>
Peanuts.....			26	506	61	703	509	6,993
				<i>Tons.</i>		<i>Tons.</i>		<i>Tons.</i>
Hay.....			254	257	244	240	936	1,003

During this 30-year period corn has occupied the largest acreage, the area planted ranging from about 10,000 acres in 1879 to over 25,000 acres in 1899. The yield per acre has ranged from 10 to 13 bushels. Corn until very recently has been almost entirely a subsistence crop, being used largely to feed work animals and for making meal, hominy, and grits for home use. It constitutes an important

part of the food of almost every family. It is fed to hogs and cattle to some extent. During the last few years the acreage of corn has been very materially increased, owing in part to the campaign carried on by educational institutions, newspapers, agricultural papers, and other agencies for diversified farming and the growing of food supplies at home. This movement has also been greatly stimulated by damage to cotton by the boll weevil.

Cotton occupies the second largest acreage, this ranging from almost 7,000 acres in 1879 to over 18,000 acres in 1909, when the acreage was greater than that of corn. Since that year the presence of the boll weevil has demoralized cotton growing and both the acreage and the yield have been very greatly reduced. Cotton is almost purely a money crop; homespun cotton is used to a very small extent for making clothing, and the seed has been used for feed and fertilizer, but the prices at present almost prohibit its use for these purposes.

Velvet beans rank next to corn and cotton, and by many farmers are regarded as even more important. This crop has come into use only recently, but it is estimated that it will be planted this year (1917) on an area more than two-thirds that devoted to corn.<sup>1</sup> Velvet beans are used principally as feed for stock and as a soil builder, but there are indications that they may become to some extent a money crop, being sold for seed, for ground feed, and for oil<sup>2</sup>.

The acreage of oats has remained almost stationary since 1879, in which year it was larger than in any subsequent census year. The yields have ranged from slightly less than 10 bushels to over 13 bushels per acre. During recent years the acreage of oats has materially increased, and the yield is also larger. This crop is used to a considerable extent for winter and spring pasturage and also as a winter cover crop. The harvested oats are fed in the sheaf or thrashed. The crop is grown almost entirely for feeding stock, but small quantities are sold locally.

Sweet potatoes are grown on practically every farm for home use and to some extent for the market. A considerable quantity is used by a canning factory at Seminary and by various girls' canning clubs. The members of several boys' pig clubs also plant small patches of sweet potatoes for fattening hogs. The largest acreage reported in this crop was 922 acres, in 1909, and the smallest, 435 acres, in 1899. The average yield has ranged from about 70 to 100 bushels per acre. Much larger yields are often obtained.

A small patch of sugar cane is grown on practically every farm in the county, 409 acres being reported in 1909. The crop is used for making sirup, the average yield per acre ranging from 100 to 150

<sup>1</sup> It has been estimated that the acreage planted to velvet beans in Mississippi this season (1917) will reach over a million acres.

<sup>2</sup> See Doc. 44, States Relations Service, U. S. Department of Agriculture, on Velvet Beans, by C. V. Piper.



gallons. This is largely a maintenance crop, the sirup being an important part of the daily food. It is also sold to a considerable extent on the local market. After the invasion of the boll weevil considerable attention was given for a time to sugar cane as a money crop, but the local demand was soon supplied, and lack of market facilities and scarcity of labor discouraged cane growing, so that the acreage was soon reduced to normal. At present, however, the demand for cane sirup in eastern and northern markets is increasing, and sugar cane will probably in the near future be an important money crop.

Peanuts are steadily increasing in importance. Only 26 acres were reported in 1889, but the area had increased to 509 acres in 1909. The crop is used principally as field forage for hogs.

In 1909 there were 2,030 acres in cowpeas. The greater part of the crop is sown and cut with volunteer crab grass for hay. It is also planted in cornfields and pastured after the corn is gathered.

In 1909 less than 1 acre was devoted to strawberries. The present season (1917) there are about 800 acres in this crop, and the acreage is gradually increasing. Strawberries are grown principally in the southern part of the county, near Sanford. The berries are shipped as far north as Toronto, Canada. The berry produced in this section is excellent for shipping and of large size. Last year the sales from one farm amounted to \$13,478. The cost for fertilizer and for picking was \$3,502. Over \$1,000 worth of plants were sold from this farm the previous year. The berries are sold through a cooperative association in Louisiana. Sixty-two cars of berries were shipped from Sanford last season, bringing a return of \$65,000.

Crops grown on a small scale on many farms include potatoes and beans. On a few farms there are small areas in rice, tobacco, sorghum, and fruits. A few pecan orchards have recently been planted.

There is an abundance of both cultivated and wild grasses, which afford good grazing. Lespedeza, Bermuda grass, crab grass, carpet grass, and sedge grass grow wild in nearly all sections. Bur clover, white clover, and Johnson grass grow throughout the county. Lespedeza is being seeded by many farmers, both for pasture and as a hay crop. It is sown in the early spring, and under favorable conditions from 1½ to 2 tons of fine hay is obtained in the summer or early fall. Most of this hay is used for home consumption. Bermuda grass makes excellent summer pasturage and produces as much grazing to the acre as any other grass, if not more. Bur clover sown on pasture land that is well set in Bermuda grass furnishes grazing during the winter, and the combination makes a permanent pasture both winter and summer. Large open ranges, either cut-over land or uncleared bottom land, afford free grazing to stock raisers. Car-

pet grass, crab grass, sedge grass, lespedeza, and switch cane grow in these areas. Some of the more progressive farmers have pastures planted in Bermuda grass, lespedeza, white clover, and hop clover.

In 1909 there were 146 calves sold or slaughtered on farms, 3,352 other cattle, 7,983 hogs, and 233 sheep and goats. There were 4,101 dairy cows in the county in that year. There is a strong tendency at the present time toward the raising of larger numbers of live stock of all kinds and of better quality. Considerable attention is given to dairying, and farmers are attempting to build up dairy herds by the use of scrub cows and registered males. The Jersey is the favorite dairy breed. There are some Holstein animals. Of hogs, the Duroc-Jersey seems to be in greatest demand, although the Poland-China and Berkshire are common. Much interest is taken in boys' pig clubs, and more than 500 boys and girls are breeders of pure-bred Duroc-Jersey hogs. The county has more than 1,000 members in "baby beef," pig, corn, tomato, and poultry clubs.

The tendency of agriculture in Covington County seems to be toward a more diversified system in which the greater part of the food products are grown at home and live stock, dairy products, cotton, strawberries, and a few other crops are depended on principally for income.

The relation between soils, topography, and crops is not very sharply defined. The early settlers located many of their fields on areas of loamy sand in the stream bottoms, probably because these lands were level, close to water, and easily cleared and cultivated. Continuous farming to corn and cotton soon exhausted the humus, and many of these old fields have long since been abandoned. They are now reforested with large second-growth pine. Some of these fields have again been cleared and farmed. Hill soils having heavy clay subsoils near the surface and poorly drained bottom land and bench soils are colder natured and produce later crops than the warmer hill soils or better drained bottom soils. Soils having a uniform color in the subsoil have better underdrainage and as a whole are more productive than those having a mottled subsoil. Well-drained terrace soils and upland soils having deep, red subsoils are generally recognized as the best corn soils. Warm upland soils are used almost exclusively for cotton since the invasion of the boll weevil. Soil well supplied with organic matter, especially around the heads and along the lower slopes bordering small streams, are usually selected for sugar cane. Some farmers select low-lying areas for oats and lespedeza. Warm, sandy land is used for melons. Strawberries are grown on various grades of second-bottom land and also on the uplands.

Land is plowed to a depth of 3 or 4 inches, mainly with one-horse plows. Two and three horse teams are used to some extent, and the

land is flat-broken to a depth of 4 or 5 inches. In growing cotton the land is bedded and the cotton planted on the ridges. Corn is often planted the same way. Corn is sometimes planted on a level surface, but very seldom in the water furrow. The seed is usually planted in rows  $3\frac{1}{2}$  feet apart, with the stalks 18 to 30 inches apart in the row. Many farmers plant two rows of corn and one of velvet beans. Others plant three of corn and one of beans, and still others plant both corn and beans in every row. Cowpeas are often seeded in the rows and peanuts between the rows. Corn is usually given two to four cultivations, depending on the season. One-horse implements and hoes are used exclusively in cultivating. Cotton rows are placed about the same distance apart as corn rows. Some farmers first chop cotton so as to have a stalk every 15 to 18 inches, and chop it a second time to remove every alternate plant. Spacing depends upon the soil, the richer the land the wider the rows and the farther apart the spacing in the row. The tendency of the better farmers in growing both corn and cotton is to have a well-prepared seed bed and to give frequent, shallow cultivations.

Oats are sown in the fall, preferably from the middle of October to the first part of November, and harvested in May. Lespedeza is frequently sown in the oats, and a crop of hay cut after the oats have been removed. Cowpeas are frequently sown following a crop of oats, to be cut for hay. Cowpeas and crab grass constitute the principal hay crops, although lespedeza is gaining in importance.

Strawberry plants are set out on ridges in single rows. Plants set in the fall produce a small crop the next season, and are usually allowed to bear three, but in some cases four, years.

Farm equipment in general is poor. There are a few good houses and barns and some stone silos, but there is great need for more and better farm buildings, more machinery, more work stock, and more and better live stock of all kinds.

Few farmers have any well-defined crop rotation. Some follow cotton, which has been fertilized, with corn, which derives some benefit from the fertilizer applied to the cotton. There is also a general attempt to build up the soil by the growing of leguminous crops, especially velvet beans.

In 1909 the expenditure for fertilizer in Covington County amounted to \$61,710, or \$42.09 for each of the 1,466 farms reporting an expenditure. The greater part of the commercial fertilizer purchased is used on cotton. From 200 to 300 pounds of various grades of ready-mixed fertilizer is used per acre. These at present contain only very low percentages of potash, or none at all. Acid phosphate is used to a considerable extent. Corn receives little commercial fertilizer, but the greater part of the lot manure is used



on this crop. Strawberries receive 400 to 600 pounds of high-grade fertilizer per acre.

Both white and negro laborers are employed, in about equal numbers. A few Italians are hired in the strawberry fields. At present labor seems to be rather abundant but the hands are not very efficient. The pay ranges from \$10 to \$12 a month and rations, or from 75 cents to \$1 a day without board. Cotton pickers receive 50 cents per hundred pounds. Strawberries are picked by the basket, the daily earnings ranging from a few cents for small children to \$1.50 or \$2 for good pickers.

The farms range in size from only a few acres to several hundred acres. In 1910 there were a total of 1,878 farms, averaging 85 acres each in size, having 26.8 acres of improved land per farm. Of all the farms 68 per cent are operated by owners, the remainder being in the hands of tenants. The greater part of the land is rented on shares, the owner furnishing work stock, seed, tools, and one-half the fertilizer. The tenant furnishes the other half of the fertilizer and receives one-half the crop. When the tenant furnishes teams, seed, and tools the landowner receives one-third of the corn and one-fourth of the cotton.

Uncleared cut-over land in large or small tracts may be purchased at prices as low as \$5 an acre. Cleared and improved land ranges in prices from \$10 to about \$25 an acre.

#### SOILS.

Covington County lies within the Gulf Coastal Plain province, and within the soil region of Mississippi known as the Longleaf Pine region. The upland soils are derived from beds of sand, sandy clay, and clay. There are local beds of gravel, consisting of waterworn chert and quartz pebbles, but these are not extensive. There was probably considerable variation in the character of the original material, particularly in texture, as well as in the configuration of the surface, at the time of the uplift of the region, but subsequently many changes have been brought about by weathering and erosion, and probably also through chemical processes in the case of poorly drained areas where an excess of moisture has prevented aeration. Here the changes are opposite to the ordinary processes of oxidation that take place in the well-drained soil material. The sandy beds of Coastal Plain sediments give rise to the Ruston, Orangeburg, Greenville, and Caddo soils, while the heavy clay beds give rise to the Susquehanna soils.

The alluvial soils are composed of material washed from the uplands and deposited by streams over their present or former flood plains, the latter representing the second bottoms. The alluvial soils in some parts of the county are quite varied in texture and color

within narrow limits, so that more generalization was made in mapping than in case of the upland soils. In some of the larger stream bottoms, especially in the western part of the county, there is generally less difference between the soil and subsoil than in the upland, as material is deposited over the surface at nearly every overflow, so that there has been less opportunity for the leaching and working out of the finer material from the surface portion or for oxidation. In the case of the older alluvium, that on the terraces or second bottoms, where overflows occur no longer or only at long intervals, the material has undergone more change than on the first bottoms, and much of the soil on these terraces resembles certain upland types. There are a few low-terrace areas that resemble the first-bottom soils in the surface layer, but the subsoil here resembles that of the Cahaba types of the second bottoms or terraces. These low-lying areas are subject to short inundations after exceptionally heavy rains.

There is a certain relation between the physiography and the soil distribution, but this is not everywhere definite or pronounced. The different types of the uplands are scattered throughout the county, with varying topography. In some instances the Orangeburg soils occupy the highest ridges and hill tops, with the Ruston soils on a lower level, while on the other hand the Orangeburg is often found on the lower levels with the Ruston occupying the high ridges. The silt loam of the Ruston series generally occurs on high level areas. The heavy clays are generally confined to the lower situations and are most extensive on stream slopes, where the clay beds have been exposed by erosion.

Covington County includes 20 different soil types, which are grouped into 13 soil series. The upland soils are classed in the Greenville, Orangeburg, Ruston, Caddo, and Susquehanna series, of which the Ruston is by far the most extensive.

The Greenville soils are brownish to reddish, with a friable, heavy, red clay subsoil. In this county they occupy nearly level to gently undulating areas. The drainage is good.

The Orangeburg soils are predominantly grayish, ranging to reddish brown, in the surface layer, with red, friable sandy clay subsoils. The drainage is good.

The Ruston soils are gray, varying to grayish brown, and are underlain by reddish-yellow to yellowish-red or dull-red, moderately friable subsoil. The series is intermediate between the Orangeburg and Norfolk in subsoil color. The drainage is well established.

The Caddo series is grayish in the surface soil and mottled gray and yellow in the subsoil. A compact layer occurs in the lower subsoil, mottled yellow, gray or drab and reddish yellow. These soils in Covington County occupy lower gentle slopes and more nearly

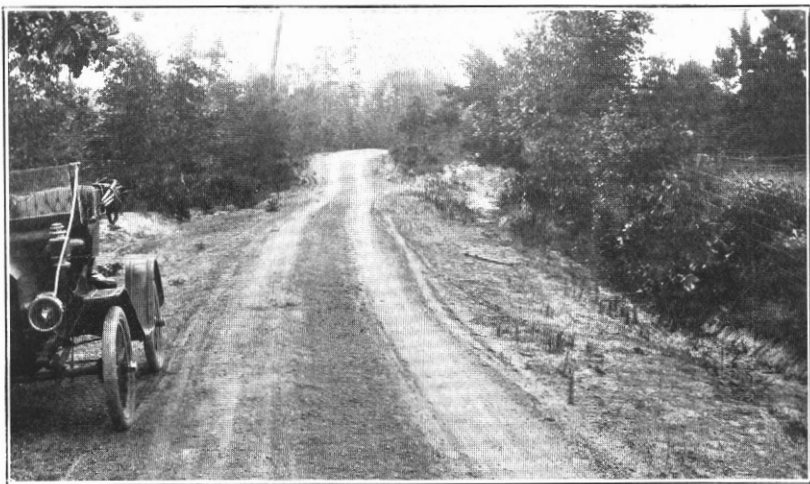


FIG. 1.—MODEL GRAVEL ROAD IN COVINGTON COUNTY, CONSTRUCTED OF LOCAL MATERIAL.

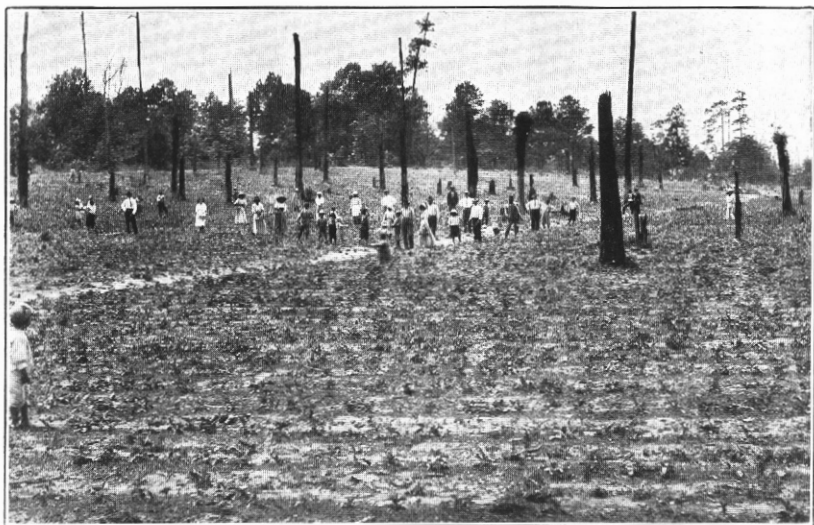


FIG. 2.—STRAWBERRIES ON RUSTON FINE SANDY LOAM.

Note that part of the field is yet uncleared of stumps.



FIG. 1.—STRAWBERRIES ON CAHABA FINE SANDY LOAM, NEAR SANFORD.



FIG. 2.—STRAWBERRIES ON MYATT SILT LOAM.



level areas than do the associated Ruston and Orangeburg soils. Their drainage is imperfect.

The Susquehanna soils are gray to reddish in color and are underlain by mottled red and gray, or red, gray and yellow, plastic, heavy clay subsoils. Red is nearly always the predominating color in the subsoil, the other colors appearing usually as mottlings in the lower portion of the soil section. The surface varies from level to rolling. Drainage is imperfect on level areas and lower slopes, but the rolling areas at least have good surface drainage.

The alluvial soils are classed in eight series. The Cahaba, Amite, Kalmia, Leaf, and Myatt soils occupy the second bottoms, or terraces, and the Ochlockonee, Bibb, and Thompson series the first bottoms, or present flood plains.

The Cahaba series is light brown to brown in the surface soil, with a dull-red or reddish-brown, friable subsoil. These soils occur in the better drained situations.

The Kalmia soils are grayish to light brown in the surface layer, underlain by a yellow, fairly friable subsoil. The drainage is fairly good in places.

The Myatt soils are gray to whitish, with some pale-yellow mottling, and have a white or light-gray subsoil with some pale-yellow mottling. The subsoil contains some concretions. The lower subsoil is quite compact. These soils occupy the more poorly drained areas of the second bottoms.

The Leaf series is characterized by light-grayish to gray surface soils, with mottled gray and yellow clay subsoils, which grade downward into mottled red and gray or red and yellow plastic clay. These soils have fairly good to imperfect drainage.

The Ochlockonee soils are prevailingly brown, ranging to dark gray. The subsoils are brownish or mottled brownish, yellowish, and gray. This series comprises the brownish soils of the first bottoms of Coastal Plain streams. They are subject to overflow.

The surface soils of the types included in the Bibb series are white upon drying out, and are underlain by white, or mottled white and yellow, subsoils. Iron stains and black concretionary material are generally encountered in the lower subsoil. These soils are poorly drained between overflows.

The surface soils of the Thompson series are grayish brown, while the subsoils are yellow, with mottlings of gray and various shades of brown and yellow. These soils are subject to overflow and are characteristically poorly drained, although their drainage is somewhat better than that of the associated Bibb soils.

The following table gives the name and the actual and relative extent of the various soils mapped in Covington County:

*Areas of different soils.*

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston fine sandy loam.....	98,624	37.6	Ochlockonee fine sandy loam.....	2,688	1.0
Orangeburg fine sandy loam.....	40,512	15.4	Kalmia silt loam.....	1,984	0.8
Caddo silt loam.....	16,768	6.4	Ruston silt loam.....	1,792	0.7
Susquehanna fine sandy loam.....	15,232	5.8	Thompson fine sandy loam.....	1,472	0.6
Susquehanna silt loam.....	14,848	5.7	Cahaba loamy sand.....	1,088	0.4
Kalmia fine sandy loam.....	14,208	5.4	Greenville loam.....	1,024	0.4
Cahaba fine sandy loam.....	13,248	5.0	Amite silt loam.....	704	0.3
Myatt silt loam.....	11,904	4.5	Leaf silt loam.....	512	0.2
Bibb silt loam.....	10,176	3.9			
Ochlockonee silt loam.....	8,768	3.3	Total.....	262,400	
Bibb fine sandy loam.....	6,848	2.6			

## GREENVILLE LOAM.

The surface soil of the Greenville loam typically consists of 4 to 12 inches of loam, dark brown to reddish brown when wet and somewhat lighter brown when dry. This is underlain by dark-red clay loam or loamy clay which passes into heavy sandy clay or clay in the lower part of the 3-foot section. In some places there is a layer 2 to 4 inches thick of fine sandy loam on the surface. The sand content in both soil and subsoil is chiefly of the finer grades. There is usually enough sand in the subsoil to impart a friable structure. The content of clay is especially high in the lower subsoil. In places the texture ranges to clay loam.

The largest area of the Greenville loam is north of Salem Church. Smaller areas are encountered in the vicinity of Powell Church. Only a few square miles are mapped.

The topography of this soil is gently undulating to gently rolling, some areas resembling table-lands. It occurs on the higher divides, closely associated with the Orangeburg and Ruston soils. The slopes leading from this type in nearly all cases are occupied by the Orangeburg or Ruston fine sandy loam.

Surface drainage is generally adequate, but the surface is seldom rolling enough to cause erosion. The underdrainage is good, as there is a sufficient quantity of angular quartz grains embedded in the matrix of clay and finely divided iron oxide to make the soil friable. The subsoil is not only rapidly absorptive, but the porosity causes excellent capillarity, and soil moisture moves readily whenever the balance is disturbed by evaporation at the surface or by the requirements of growing plants. If the soil becomes compacted or very cloddy, the upper few inches may become very hard, or may be so dry that crops suffer, and the type requires more careful management and the use of heavier implements than do the sandy loams. In some cases where slight depressions occur the subsoil is somewhat sticky and slightly impervious.

The Greenville loam is one of the most productive soils in the county where properly handled, owing in large measure to its desirable structure. Nearly all of the type is under cultivation, and some of the best farms are located on it. It is considered a very desirable soil for general farming, being adapted to a great variety of crops. Cotton, corn, velvet beans, oats, lespedeza, potatoes, and peanuts give excellent yields. Cotton is the principal money crop. Some corn and velvet beans are sold. Peaches and other fruits are well adapted to this type, and pecans seem to do well. Hog raising is of some importance as an adjunct to general farming.

Corn yields 20 to 30 bushels per acre under favorable seasonal and cultural conditions. Cotton, before the coming of the boll weevil, often yielded 1 bale per acre. Velvet beans yield 1,500 to 2,000 pounds of beans in the pod per acre.

Most of the farms on this type are small, averaging about 80 acres. The owners in nearly all cases live on the farm, and usually do their own work with the help of negro labor. In a few cases small areas of the farm are rented to white or negro laborers on a share basis, the owner furnishing everything except the seed and receiving one-half or three-fourths of the crop. Most of the farms are well improved with good fences, houses, and barns. The selling price of this land depends on the location with reference to good highways and railroads. Areas located some distance away and unimproved can be bought for \$12 to \$15 an acre, while well-improved farms would cost an average of \$40 to \$50 an acre.

The application of lime at the rate of about 2 tons per acre would probably increase yields on this type.

#### ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam typically consists of a light-brown or brownish-gray loamy fine sand to fine sandy loam which passes at about 5 to 8 inches into yellowish-brown or reddish-brown fine sandy loam, underlain abruptly at 8 to 14 inches by red, friable sandy clay. The depth of the surface or brownish layer is greatest in cultivated fields. The subsoil ranges in color from moderately bright red, where it grades into the dull red or light red of the Ruston subsoil, to deep red or dark red. In places there is some chert and quartz gravel on the surface or throughout the 3-foot section.

The Orangeburg fine sandy loam occurs principally in two topographic positions, on nearly level or gently undulating upland areas near the drainage divides, and in rather narrow strips along the upper part of steep slopes bordering the larger valleys. There are some nearly level areas and the type also occupies some very gentle slopes. It is well drained and in some places terracing is necessary to prevent erosion.

This type occurs mostly in the northeastern part of the county, and in the western part along Dry Creek. In the southeastern part areas are mapped around the head of Curry Creek, and west of Pickering. Small areas are scattered over the county.

On account of its smaller extent this type is not so important as the Ruston fine sandy loam, but in productiveness it exceeds that type. It is one of the most productive upland soils of the county, and a higher percentage of it is under cultivation than of any other type, probably 75 per cent of its total area being cultivated. Almost all the nearly level areas are or have been under cultivation. Many of the first-settled upland areas in this region were on this soil, and some have long since been abandoned. Others after being abandoned have been again reclaimed and farmed. In forested areas the growth consists largely of shortleaf pine, some longleaf pine, white oak, red oak, and dogwood.

The most important crops are corn, velvet beans, peanuts, cotton, oats, and sweet potatoes, cotton being the main money crop. Wheat does well, but is not grown extensively. This is considered one of the best soils in the county for the production of peaches. The yields are slightly higher than on the Ruston fine sandy loam. Under ordinary methods corn yields 15 to 25 bushels per acre, cotton one-half to two-thirds bale, and oats 15 to 40 bushels.

This type responds quite readily to good farming methods, such as deepening the soil, and to the growing of crops which add organic matter and nitrogen. Where it is thus built up corn under favorable seasonable conditions yields 30 to 50 bushels per acre, oats 30 to 50 bushels, peanuts 25 to 30 bushels, and cotton three-fourths to 1 bale. Such yields are often obtained on this soil in other parts of the Coastal Plain when good methods are employed.

Commercial fertilizers are used to only a small extent. Acid phosphate and cottonseed meal, mixed in about equal proportions, are applied by some farmers at the rate of 200 to 400 pounds per acre, depending upon the crop. Irish potatoes receive rather heavy applications of commercial fertilizers, and corn and cotton receive about 200 pounds per acre. Nitrate of soda at the rate of 100 pounds per acre is applied to growing corn in many cases. Where the type is too hilly and eroded to be profitably cultivated it would be advisable to terrace the hillsides and sow them to Bermuda grass, lespedeza, and bur clover, the land to be used for permanent pasture.

Land values on this type are slightly higher than for other upland soils, ranging from \$15 to \$25 an acre for improved land.

#### RUSTON SAND.<sup>1</sup>

The Ruston sand consists of about 4 to 8 inches of gray to grayish-brown, loose sand, underlain by a yellow to slightly reddish yellow

<sup>1</sup> Shown on map by sand symbol in the Ruston fine sandy loam.



sand to a depth of 24 inches, with a dull-red or yellowish-red loamy fine sand below. In the virgin soil there is enough organic matter in the upper 2 or 3 inches to give the material when wet a rather dark color. Below the surface, however, the sand is not so brownish.

The largest area of this soil is mapped near Speed School. It occurs on high knolls and on the crest of ridges. The topography is hilly to rolling, and owing to the open structure drainage is excessive.

The Ruston sand is not a very important type, as little if any of it is under cultivation. It supports a growth of scrubby oak. It is not considered a strong soil on account of its loose, incoherent structure and leachy nature. Most crops wilt and burn badly when exposed to the hot sun in dry seasons. With the plowing under of liberal quantities of vegetable matter in the form of barnyard manure or green manure the type could be used for the production of early truck crops, such as sweet potatoes, watermelons, and cucumbers.

#### RUSTON FINE SANDY LOAM.

The Ruston fine sandy loam consists of gray or grayish-brown loamy fine sand, about 3 inches thick, overlying either a pale-yellow fine sandy loam or a loamy fine sand which passes into fine sandy loam. At depths ranging from about 10 to 24 inches the material grades into dull-red to reddish-yellow, friable fine sandy clay. In many places the lower subsoil (below depths of 28 to 30 inches) is more compact than the upper subsoil, even where it contains more sand, as is often the case, and it is also often mottled with yellow and gray. The compaction is usually not so marked as in the Caddo soils, and the mottling is less intense. In many places this compactness is lacking, and the soil remains friable and uniformly reddish throughout the 3-foot section, often passing in the substratum into more reddish material, resembling that of the Orangeburg subsoils. The depth of the soil and subsurface section, while varying considerably, probably averages about 12 to 14 inches. In some places the depth is greatest on the lower gentle slopes and least on the steeper slopes and level areas. Again the soil may be deepest on the level areas. The type grades into the Orangeburg fine sandy loam, and it is sometimes difficult to decide where the boundary should be placed. As mapped, the type includes patches of Orangeburg fine sandy loam. On the lower slopes it passes gradually into the Caddo soils.

Waterworn chert and quartz gravel often occurs scattered over the surface and through the surface soil, with little in the subsoil. In other places gravel is abundant throughout the 3-foot section, being frequently more abundant in the subsoil, where it occasionally constitutes almost the entire mass. These gravelly areas are shown on the map by gravel symbols.

In places the texture approaches a very fine sandy loam or silt loam. The finer textures usually occur on smooth, nearly level areas along the crests of divides. In a few places the soil contains sufficient medium and coarse sand to give it a harsh feel. Such areas approach a sandy loam in texture.

In color of the surface soil there is quite a wide range, from light ashy gray to deep brown. Light gray predominates in the virgin soil of the nearly level areas. On the slopes the color is darker. Where the soil has been under cultivation for some time it is usually darker in color, especially where seeded to legume crops.

The Ruston fine sandy loam is the most extensive type mapped. It occurs in broad areas throughout the county, its continuity being broken by areas of Orangeburg fine sandy loam, Susquehanna fine sandy loam, Caddo silt loam, and alluvial soils along the stream channels. In the southeastern part of the county the Ruston fine sandy loam forms the main body of upland soil. East of Okatoma Creek a large and almost continuous body extends from near the edge of the upland to the Jones County line. West of the creek the type is not quite so extensive and is separated from the alluvial soil for a considerable distance by a belt of Susquehanna soils. South of Bowie Creek there is a third and smaller area. The type occurs in continuous developments covering the divides between the smaller streams and the adjacent slopes, but in places along the larger streams strips of Orangeburg or Susquehanna soils intervene between this type and the bottom-land soils.

The surface is characteristically rolling. The slopes and crests of the ridges and hills are usually smooth and not broken by shoulders or gulches. There are some flat areas on the ridge crests and many very gentle slopes. In general the topography permits of easy cultivation, but there are some slopes where the steepness interferes with cultivation and causes damaging erosion. Surface drainage is good to excessive. Underdrainage is fair, being not quite so thorough as in the Orangeburg soils but much better than in the Susquehanna.

This is the most important type in the county. The greater part of it is capable of easy cultivation, but probably not over 25 per cent of it has been brought under the plow. The remainder consists of cut-over land which formerly supported a heavy growth of longleaf pine. The second growth consists largely of blackjack and post oak, with some second-growth pine. The principal crops grown are corn, oats, velvet beans, peanuts, cowpeas, and cotton. Cotton is the principal money crop. Of the special crops the most important is strawberries. (See Pl. I, fig. 2.) About 800 acres of berries are grown in the county, and part of the acreage is on soil of this type. Other crops are watermelons, sweet potatoes, sugar cane, sorghum, and potatoes.

Under the prevailing farming methods corn yields about 15 bushels per acre. When better methods are followed, including deeper breaking, the addition of organic matter and nitrogen through the growing of velvet beans and other legume crops, and frequent shallow cultivations, yields of corn in favorable years range from 20 to 40 bushels per acre. Cotton when seasonal conditions are unfavorable to the boll weevil ordinarily yields about one-third bale per acre, but when the soil is deepened, organic matter and nitrogen added, and acid phosphate applied, the crop under favorable seasonal conditions yields one-half bale or more per acre. This soil is suited to all the common crops, and all are grown on it to a greater or less extent.

Few estimates of the yield of velvet beans are obtainable, as the greater part of the crop is pastured by stock, but where it is seeded in corn yields apparently average 1,000 pounds of beans in the pod per acre, and as much as 2,000 pounds is often obtained.

Sugar cane yields from 75 to over 200 gallons of sirup per acre, sweet potatoes 50 to 120 bushels per acre, and strawberries 50 to 150 or more 24-quart crates.

Prepared fertilizers are used extensively on this soil. Some farmers depend on legumes for nitrogen, and buy only acid phosphate.

Unimproved land of this type can be bought at present in large tracts for \$10 or less an acre. Improved land ranges in price from \$10 to \$25 an acre.

This soil is not naturally very productive. The greater part of it however, has a sandy clay subsoil, of a character that makes it easy to improve the productiveness of the soil. The greatest needs are gradually to deepen the plowing and to increase the organic content. This can best be done by plowing under stalks and trash of all kinds, by growing and plowing under legume crops, by growing winter cover crops, by raising more live stock and using all the available manure, and by preventing erosion. By following these methods yields can be very greatly increased, and in many places doubled. The steeper slopes should be either used for soil binding crops, such as grass; well terraced and cultivated, with the furrows following the contour of the slopes; or left in forest.

#### RUSTON SILT LOAM.

The Ruston silt loam consists of 3 or 4 inches of grayish silt loam, passing into light-brown to pale-yellowish silt loam which at a depth of about 10 inches is underlain by yellowish-brown silty clay. At about 18 to 24 inches this passes into reddish-brown, moderately friable silty clay. In the lower subsoil the material is often more sandy and more friable. The surface soil usually contains appreciable quantities of very fine sand.

The Ruston silt loam occurs on level hilltops and gentle slopes in the northern part of the county. It is not very extensive. The largest area is mapped in the northwestern corner of the county. Other areas are scattered on the east and west sides of Dry Creek, and northwest of Union Church.

The surface is level to gently sloping, and favorable to farming. Drainage is usually good. The surface is smooth, with few streams intersecting, but the type is drained by intermittent drainage ways. The moderately friable subsoil permits of good underdrainage.

Probably 40 per cent of this type is under cultivation. The remainder consists of recent cut-over land or timbered areas, on which the growth is mostly pine. This soil is somewhat more productive than the Ruston fine sandy loam. Cotton, corn, and velvet beans are the main crops. Oats, peanuts, and lespedeza do well and are grown to some extent. Corn yields from 15 to 25 bushels per acre, cotton one-half to three-fourths bale, and oats about 25 bushels. This soil is handled in about the same way as the Ruston fine sandy loam, and the same kind of fertilizers are used.

The selling price of this land depends upon the improvements and location. Cut-over land is valued at \$5 to \$8 an acre, while areas free from stumps sell for as much as \$30 an acre.

The type could be improved by adding manure or plowing under green-manure crops, and by growing the legumes.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Ruston silt loam:

*Mechanical analyses of Ruston silt loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423825.....	Soil.....	0.1	2.4	4.1	15.5	3.6	66.7	7.4
423826.....	Subsoil.....	.1	2.4	3.8	15.8	4.2	50.2	23.7

CADDO SILT LOAM.

The Caddo silt loam consists of gray to brownish-gray or very light brown silt loam, underlain at 3 to 8 inches by pale-yellow silt loam which frequently shows faint-gray mottlings and passes into yellow silty clay loam. This in turn overlies, at depths ranging from about 10 to 15 inches, yellow clay which contains enough sand to impart a distinct friableness. At about 18 to 26 inches a compact layer is reached, which is mottled yellow, gray, or drab and reddish yellow.

In some places the gray mottling and compaction are not conspicuous within the 3-foot section; such areas resemble the Norfolk series. They occur in the better drained, high situations, and would



be mapped as Norfolk if of sufficient size. There are also included, throughout the main body of the Caddo soils in the northwestern part of the county, some small, scattered flattish areas in which the lower subsoil consists of compact silty clay containing a large quantity of dark ferruginous material and usually brownish and black concretions. These small areas resemble the Pheba silt loam and had they occurred in larger developments would have been mapped as such.

The Caddo silt loam is mapped southwest of Sanford, west of Collins, in the northwest part of the county, west of Cold Spring School, north of Pickering, and in the southwestern part of the county. It consists of cut-over lands, originally timbered with long-leaf pine.

The type occurs on gentle, low slopes and on flat and gently undulating areas lying noticeably lower than the Orangeburg or Ruston soils, with which it is often associated. It is found in valleylike and basin situations and on the lower slopes along the outer margin of stream terraces. Owing to its comparatively level topography and the impervious material in the subsoil the drainage of both surface soil and subsoil is imperfect.

Although the topography is well suited to tillage and the type occurs mainly in fairly large areas, it is not important in the agriculture of the county, because of its low natural productiveness. Only about 10 per cent is in cultivation. Most of the type is cut-over land, supporting a growth of scrub oak and native grasses. Cotton and corn, with some oats, are the principal crops grown. Where the type is not cultivated it affords free range for cattle, sheep, and hogs.

Under good farming methods fair yields of corn, velvet beans, cotton, and oats can be obtained. The one-horse plow is used in most cases. Very little commercial fertilizer is used, but all the available barnyard manure is applied.

The type as cut-over land is valued at about \$4 to \$7 an acre, according to its location. Where the land has been cleared of stumps and put under cultivation, and includes some improvements, the price ranges from \$10 to \$12.50 or more an acre.

Owing to the favorable topography, this soil will probably be in demand in the future. It is possible that liming would be of benefit to crops, but drainage is the first essential of much of this land. The growing of winter cover crops to be turned under in the spring, followed by leguminous summer crops such as velvet beans, cowpeas, soy beans, or peanuts, would increase the productiveness. It would be advisable to apply phosphoric acid at the rate of 200 to 400 pounds per acre before planting the spring crop. Deep fall plowing would aid in the building up of this type.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Caddo silt loam:

*Mechanical analyses of Caddo silt loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423801.....	Soil.....	0.7	2.5	2.7	17.1	11.7	46.7	18.4
423802.....	Subsoil.....	.7	3.0	3.4	26.0	13.2	37.6	15.9

SUSQUEHANNA FINE SANDY LOAM.

The Susquehanna fine sandy loam consists of a grayish to light-brownish fine sand or loamy fine sand underlain at about 6 to 12 inches by yellowish fine sandy loam which is abruptly underlain at any depth from about 8 to 14 inches by mottled red and pale-yellow, plastic clay. This passes into mottled red, gray, or drab and pale-yellow, plastic, sticky clay. Frequently the upper subsoil is dull red, with little or no mottling. On the steeper slopes the grayish or brownish surface soil is generally shallower than on the more level areas, being not more than 5 inches thick in places. Small quartz and chert gravel particles occur in the surface soil occasionally.

The largest areas of Susquehanna fine sandy loam occur near Collins, east and west of Mount Olive, in the northeastern part of the county, around Arbo, northwest of Seminary, south of Deen Store, and in the southwestern part of the county.

The type in most cases occupies gentle to steep slopes. It is often encountered in narrow strips as the dividing type between the uplands and the second bottoms. In the northeastern part of the county the topography is somewhat hilly. Surface drainage is usually fair, but the impervious nature of the subsoil retards the underdrainage.

Probably not more than 5 per cent of the Susquehanna fine sandy loam is under cultivation. It is not considered a very valuable agricultural soil, but it is better, at least for cotton, than the Susquehanna silt loam. Very little timber remains, the original longleaf pine having been cut.

The principal crops grown are corn, cotton, velvet beans, and cow-peas. The type is used to some extent for pasture. Yields of all crops are only fair except where well fertilized. The present method of handling this soil for cotton and corn, the principal crops, is to break to a depth of 3 to 4 inches in the spring, and plant on a bed. Very little of the land is plowed in the fall.

Farms on this type range in selling value from \$4 to \$10 an acre.

The type probably would be greatly improved by applying 2 to 3 tons of crushed limestone per acre, followed by deep breaking in

the fall and the sowing of some winter cover crop such as rye, oats, hairy vetch, or crimson clover. In the early spring the cover crop should be turned under as green manure. Acid phosphate, at the rate of 200 pounds per acre, could then be applied, and the summer crops planted. Drainage should be improved with open ditches. Where the land is to be used for pasture the pasture-grass seed could be sowed with the winter cover crop, the latter not being turned under.

#### SUSQUEHANNA SILT LOAM.

The Susquehanna silt loam typically consists of grayish or very light brown silt loam passing at about 3 inches into pale-yellow silt loam which gives way abruptly to pale-yellow silty clay loam. At about 8 to 10 inches this is underlain by yellowish, plastic clay, and at any depth from about 18 to 25 inches by mottled pale-yellow, red, and grayish or drab, plastic clay, which is very sticky when wet.

This type occurs mostly on level areas and very gentle slopes. On the steeper slopes and in the more rolling areas the upper subsoil is dull red or mottled red, yellowish, and gray or drab, rather than yellow, and the lower subsoil is intensely mottled gray or drab or pale yellow and red. Nearly everywhere the gray, drab, or pale-yellow mottling predominates in the lower subsoil and substratum, and in some places there is no red mottling at these lower depths. Some areas contain gravel scattered on the surface and through the subsoil.

The type is closely associated with the Caddo silt loam. In many places the two types are so mixed that it is impossible to map them accurately, and the Caddo soil is included with the predominating Susquehanna silt loam. In a few patches the surface soil has been washed away and the heavy clay subsoil is exposed. These areas would have been mapped as Susquehanna clay if of sufficient size.

The Susquehanna silt loam is mapped throughout the county. The largest area occurs in the southwestern part, near Caney Head School. Other large areas are mapped southeast of New Hope Church, on the southern county line, near Seminary, southwest of Kola, and west of Collins. The surface varies from level to rolling. Drainage is imperfect, particularly on the level areas and gentler slopes.

The Susquehanna silt loam is rather low in productiveness, probably owing in large measure to the impervious subsoil. There probably is not sufficiently free circulation of air and water to release in assimilable form such elements of plant food as may be present. The type is not considered a good agricultural soil, and only a small proportion of it is cultivated. The farms that have been opened up consist largely of areas where a rather deep layer of silt overlies the heavy subsoil. Most of this type is recent cut-over land, originally supporting a good growth of longleaf pine.

Unless this soil is well supplied with organic matter the yields of all crops are rather low. The turning under of cornstalks, barnyard manure, and green-manure crops, such as winter oats, bur clover, cowpeas, and velvet-bean vines, with a heavy application of ground<sup>1</sup> or crushed limestone, would increase the productiveness. This would also greatly improve the physical condition, as the lime causes flocculation of the clay particles, resulting in better drainage and aeration. In applying lime rather large quantities should be used. From 3 to 4 tons per acre gives good results. Lime should always be used in conjunction with humus-forming material. The type seems adapted to grasses, and in areas some distance from railroads, where the cost of hauling lime is considerable, it would be advisable to use it for permanent pastures. Bermuda grass, carpet grass, and lespedeza seem to do well and are excellent pasture grasses.

#### CAHABA LOAMY SAND.

The Cahaba loamy sand consists of brown loamy sand underlain at about 10 inches by lighter brown or reddish-brown loamy sand. The color and texture of the subsoil usually remain uniform to a depth of 3 feet. In some places, however, the soil below 24 inches grades into sandy loam or light sandy clay. The texture of the soil in places ranges to loamy fine sand.

This type occurs on low mounds or slight ridges on the low terraces of Cahaba fine sandy loam. The areas are small, usually covering less than 40 acres. Many of these areas were farmed in early times, but have since been abandoned. Where well supplied with organic matter the type is fairly productive, but when the organic content is exhausted it fails to produce well. Like the other terrace soils of this region, it originally supported a growth of magnolia, beech, gum, water oak, and some pine, but at present there is usually no timber growth except a few old-field pines.

The type seems well adapted to watermelons, sweet potatoes, and peanuts. Corn does fairly well. With liberal applications of commercial fertilizer sugar cane produces good yields, and the sirup is of excellent quality.

The Cahaba loamy sand is a warm, early soil, and where the moisture conditions can be controlled and the type is situated within a short distance of railroad facilities it would be well adapted to the growing of early truck. The open structure of soil and subsoil renders the moisture content uncertain, and the moisture condition could be greatly improved by the incorporation of organic matter, as by turning under cowpeas.

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<sup>1</sup> Crushed limestone may be obtained from the State Lime Crushing Plant at Waynesboro at 60 cents per ton f. o. b. plant. The freight rate is low, and the price of lime delivered in Covington County should not be over \$1.60 a ton.



## CAHABA FINE SANDY LOAM.

The Cahaba fine sandy loam is a light-brown to brown loamy fine sand to fine sandy loam, underlain at 8 to 12 inches by dull-red or reddish-brown fine sandy loam to fine sandy clay. Along the margin of the terraces, where the surface has been eroded, the soil is in many places dull reddish brown, with a deep reddish brown subsoil, such areas representing inclusions of Amite fine sandy loam. Away from the edge of the terrace the surface soil is deeper, the red color is not so pronounced, and the deep subsoil in places has the yellowish appearance characteristic of the Kalmia series. The type grades from typical near the stream margin of the terrace into Kalmia, Myatt, or Ruston soils along the outer edge of the terrace. In texture the areas mapped range from very fine sandy loam, which usually lies nearest the streams, to small areas of sandy loam which usually occur as low mounds or ridges.

The type occurs in two distinct positions. Typically it forms low, level or almost level, distinct terraces, separated from the first bottoms along the stream channel by a distinct drop of 20 to 40 feet. Portions of these low terraces are subject to overflow in case of unusually high water. In places it occupies high-terrace areas which are in most places separated from the low terrace by a distinct bench 10 to 20 feet or more in height, grading on the outer side into the adjacent upland. The soil on these high terraces is usually more reddish in color and heavier in texture, especially in the subsoil.

Included with the high-terrace variation are a few small areas in which the soil is deep reddish brown in color and the subsoil deep or dull red, approaching in color and texture the subsoil of the Orangeburg fine sandy loam. These areas really represent the Amite fine sandy loam. The most important occur on the north side of Bowie Creek about 1 mile north of New Hope Church. In section 12, south of Pickering, a rather large area in which the surface soil approaches a silt loam, brown to reddish brown in color, and the deep subsoil is light brown to grayish brown, is included with this type.

Areas of the Cahaba fine sandy loam occur near Mount Olive and along Leaf River, Okatoma Creek, and Bowie Creek. A few small areas are found along the smaller streams. The type usually occupies narrow belts along the stream side of the terraces.

Drainage is generally very good, but in parts of the low terraces it could be improved by ditching.

Agriculturally this is the most important alluvial type of the county. It was the first to be cultivated by the early settlers and much of it is still in cultivation, producing good crops. It was formerly heavily timbered with pine, white oak, sycamore, sweet gum, and magnolia. Nearly 75 per cent of it is at present under cultivation.

The Cahaba fine sandy loam is used extensively for corn and velvet beans, and probably gives the largest average yield of any type of the county, but much of the soil has been seriously impaired by continuous cropping, and in some areas the covering of loose sand is too deep for good results. When the soil is first put under cultivation, or where the productiveness is maintained, corn yields 25 to 45 bushels per acre. Oats do well, yielding 15 to 50 bushels. Cotton is not quite so early as on the Ruston and Orangeburg soils, and consequently is not grown as extensively as before the arrival of the boll weevil, early crops being very essential in combating the weevil. A larger acreage is in strawberries than on any other type. (See Pl. II, fig. 1.) It produces good berries and the yields are satisfactory, ranging from 50 to 150 24-quart crates per acre.

This soil is handled in much the same way as the principal upland soils, and about the same kind and amount of fertilizer is used.

Farms on which this is an important type are held at prices ranging from about \$15 to \$30 or more an acre. The price depends largely upon the location and the distance to public roads, schools, and towns. Some old fields can be bought for less than \$10 an acre.

This type can be improved by the growing of legume crops and the incorporation of organic matter. None of the tame clovers apparently are grown in this county, but in other areas similar soils are used extensively for the growing of white, red, and crimson clover, and to some extent alfalfa is produced successfully. To grow alfalfa on this type the soil should be in a high state of productiveness, carefully cultivated for some time before seeding to exterminate all weed and grass seeds, and given liberal applications of ground limestone. A good seed bed should be carefully prepared, and the soil inoculated before seeding. After a good stand has been obtained and has become well rooted it should be well cultivated the second year with a spring-tooth harrow immediately after each cutting to keep down the crab grass or other weeds. This soil is well suited to Irish potatoes, sweet potatoes, melons, cucumbers, tomatoes, cabbage, and a large variety of vegetables suitable for early shipping and for canning.

#### AMITE SILT LOAM.

The Amite silt loam consists of a brown, dark-brown, or reddish-brown silt loam which at a depth of 3 or 4 inches grades into a heavy but friable silt loam of the same color. Below 18 to 24 inches this grades into a reddish-brown fine sandy clay. In places, however, especially where the drainage is not good, the subsoil below 24 inches becomes light brown or pale yellow to gray and usually shows mottlings of reddish brown, yellowish brown and black. Iron concretions are found in the subsoil where lighter colored. Some included areas consist of fine sandy loam.

The Amite silt loam occurs on low terraces separated from the stream flood plain by a distinct drop of 18 to 20 feet, but at times of extremely high water it is sometimes subject to overflows. The principal areas of the type are long, narrow strips along Okatoma Creek. The drainage of the higher land is good. The light-colored and mottled subsoil in places indicates poor underdrainage.

Owing to its limited extent, this is not an important type agriculturally, although it is one of the most productive soils in the county. Practically all of it is under cultivation, principally to corn, oats, and lespedeza. Other crops of importance are velvet beans, cowpeas, and sugar cane. Corn yields an average of 30 to 50 bushels per acre, depending on the cultivation and the nature of the season. Oats yield from 15 to 40 bushels per acre. Lespedeza yields from 2 to 2½ tons per acre for the season.

Under the present system of handling this type little attention is given to improving the drainage and crops are planted late, as on the bottom soils. The type is naturally very fertile, as a heavy deposit of organic matter was laid down when the stream flowed at a higher level than at present, and other deposits are added during exceptional high-water stages, which usually occur once in every 4 to 7 years.

Areas of the type near the railroad and the town of Collins are valued at \$50 an acre.

Owing to the high natural productiveness of this type every effort should be made to develop it. The wet places and the occasional lagoons should be drained by open ditches leading to the main streams. With the liberal addition of crushed limestone alfalfa could be successfully grown.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Amite silt loam:

*Mechanical analyses of Amite silt loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423819.....	Soil.....	0.4	1.5	2.0	9.0	9.1	55.0	22.9
423820.....	Subsoil.....	.1	1.0	1.0	5.5	4.8	59.8	27.9

KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam consists of gray to grayish-brown loamy fine sand to fine sandy loam, 5 to 8 inches deep, overlying pale-yellow fine sandy loam which passes at 10 inches or more into yellow, friable fine sandy clay. This in places is compacted and mottled yellow, reddish yellow, and gray in the lower part of the 3-foot section. Where the drainage is well established there is little

or no mottling in the lower subsoil. Often there are encountered in the lower subsoil some small, black or brown oxide of iron concretions. Some low depressions occupied by Myatt fine sandy loam and silt loam are included with this type. In the slightly depressed areas the lower subsoil is grayer in color than typical, and the black iron concretions are more abundant.

The Kalmia fine sandy loam is developed on the second bottoms of the larger streams. It occupies the terraces which lie above overflow except during unusually high stages of the water. The surface is predominantly level, with only a few slight depressions or undulating to slightly hummocky areas. Natural drainage is not well established in most cases.

The type at present is not important in the agriculture of the county, owing to its low productiveness under present methods of utilization. Probably 50 per cent of it is under cultivation. The remainder supports a growth of pine and some oak. Corn, velvet beans, and oats are the principal crops. Sugar cane, sorghum, cowpeas, and peanuts are grown to a small extent. Yields are not as high as on the associated Cahaba fine sandy loam. Where the type is fairly well drained and well cultivated corn yields an average of 15 to 20 bushels per acre. Strawberries recently have been grown to some extent.

The Kalmia fine sandy loam is cultivated in about the same way as the upland types. Commercial fertilizer or barnyard manure is generally used for all crops. Acid phosphate and cottonseed meal, mixed in equal proportions, is frequently applied before crops are planted, at the rate of 200 pounds per acre. When the land has been seeded to velvet beans the previous year the cottonseed meal is left out and the acid phosphate applied alone.

This land sells at an average price of \$7 to \$10 an acre, depending on its location and improvement.

This soil is deficient in nitrogen and organic matter. Heavy applications of barnyard manure, and the planting of velvet beans in close rows would be beneficial. Green-manure crops should be plowed under occasionally. Much of this type would be more productive if lime were applied and ditches dug or tile drains installed. The type is sufficiently elevated above the first bottoms to give adequate fall. The use of lime and tile on a farm on this type in Jones County adjoining has so improved the soil that it produces practically as large yields as the most fertile soils in the State.

#### KALMIA SILT LOAM.

The Kalmia silt loam consists of a light-brown to grayish-brown silt loam, underlain at about 6 inches by pale-yellow silt loam which at 10 to 15 inches passes into yellow, friable clay. This is mottled

somewhat with gray and reddish yellow at about 30 inches, where some compaction is commonly noticed. In slightly depressed areas where the surface drainage is poor the subsoil is a mottled gray or drab and brown silty clay loam.

The Kalmia silt loam is not extensive. It is developed in small areas along the second bottoms of Oakohay Creek, Okatoma Creek, and Bowie Creek. It occurs as almost flat areas lying adjacent to the first bottoms of the streams, and the drainage as a whole is poor. In the higher lying situations where the surface slopes somewhat the drainage is better, and the subsoil has less mottling.

About 70 per cent of the type is under cultivation at the present time. The timber growth consists of water oak, pine, and some red oak. The principal crops are corn and velvet beans. Potatoes and tomatoes are grown to a limited extent near Seminary to supply a canning factory. Other crops grown on this type are sugar cane, sorghum, cowpeas, and peanuts. Corn ordinarily yields 15 to 20 bushels per acre. Velvet beans range in yield from 1,000 to 1,500 pounds, in the pod, per acre.

Land of this type including some improvements and located close to good roads and towns has a selling value of \$12.50 to \$15 an acre.

The same methods that are suggested for improving the Kalmia fine sandy loam can be used with good results on this type.

#### LEAF SILT LOAM.

The Leaf silt loam consists of an ashy-gray to slightly yellowish silt loam, about 8 to 10 inches deep, grading into yellow silty clay. This is underlain at about 16 to 18 inches by a mottled gray and red, or gray, yellow, and red, plastic, heavy clay, resembling the subsoil of the Susquehanna series. Occasionally small black iron concretions are quite abundant in the soil.

In a few places the surface soil has been washed off, leaving only 3 or 4 inches of the silt loam overlying the tenacious, heavy clay of the subsoil. In forested areas the content of organic matter is usually high in the first few inches of soil, making it dark gray to black in color. This color seldom extends to a depth of more than 2 or 3 inches, where the typical grayish-yellow soil is encountered.

The Leaf silt loam occurs in small patches near Seminary, west of Reddocks Bridge, and along Leaf River. It is generally associated with the Kalmia or Myatt soils, and occupies flat, poorly-drained areas on the terraces. Drainage of both soil and subsoil is poor.

Probably 50 per cent of the type is under cultivation. Corn, cotton, and oats are grown. Yields are not as good as on some of the better drained, associated terrace soils. Velvet beans seem to do well, giving an ordinary acreage yield of 1,000 pounds of beans in the pod. The



application of lime and improvement of the drainage would prove beneficial to this type.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Leaf silt loam:

*Mechanical analyses of Leaf silt loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423807.....	Soil.....	1.0	1.8	0.9	4.5	12.3	65.9	13.0
423808.....	Subsoil.....	.5	.9	.5	3.4	12.7	44.3	37.0

MYATT SILT LOAM.

The typical Myatt silt loam consists of 6 to 10 inches of gray silt loam, with some pale-yellow mottling, underlain by a subsoil of gray silty clay which shows some pale-yellow mottling and contains some small concretions. The lower subsoil is often quite compact, and it contains more concretions than the overlying material. Small, black, soft oxide of iron concretions are usually scattered over the surface and are present in the soil and subsoil.

Near the old sawmill site southeast of Seminary much of the Myatt silt loam consists of a mottled rusty-brown and grayish silt loam passing at about 8 inches into mottled, pale-yellow silt loam or silty clay loam which quickly grades into mottled, pale-yellow and gray or drab silty clay. This becomes very compact at 15 to 24 inches, and shows gray or drab mottling as the predominant color. In places the type grades into a fine sandy loam. The largest of these coarser areas occurs southeast of Mount Olive, on Okatoma Creek.

The largest areas of Myatt silt loam are mapped near Sanford, along Leaf River in the northeastern part of the county, in the forks of Bowie and Terrible Creeks, and along Okatoma Creek northwest of Seminary. It occurs as broad, level flats, and is locally termed "cold-natured land" or "crawfish land."

The type occupies the benchlike lands or terraces adjacent to the streams, and lies well above normal overflow. The surface is predominantly flat and level, with only a few slight depressions or undulating to slightly hummocky areas. Drainage is inadequate, and surface water often stands for long periods during wet seasons. The subsoil of much of the type is impervious to water, causing poor underdrainage.

Near Sanford this soil is used successfully on a large scale for the production of strawberries, and with the increased interest in this crop much of the type will probably be developed for this purpose in the future. (See Pl. II, fig. 2.) In other sections of the county

the type is yet undeveloped, being used for pasture or left in timber. About 40 per cent of its total area is under cultivation. The timber growth consists of longleaf pine, water oak, willow oak, gum, bay, and some hickory. The pasture and timbered areas have a thick undergrowth of gallberry bushes.

The soil is cold natured and recognized as low in productiveness, and it is not used very extensively for any crops except strawberries. In nearly all cases it is well drained with open ditches or tile drains before being planted to strawberries. The same methods are used in producing this crop as on the Ruston and Cahaba soils. The berries do not mature quite as early on this type and the yields are somewhat lower, but the quality is equally good. Fertilizers of a high grade are used, at the rate of 400 to 600 pounds per acre. Those used at present contain only a very low percentage of potash, if any.

This type of land, where in an undeveloped state and situated some distance from a railroad, sells at an average price of \$5 to \$8 an acre. Areas improved with tile drains and set to strawberry plants are not on the market, but would bring about \$50 an acre if sold.

The foremost need of this soil is thorough drainage by means of open ditches and tiles. Crushed limestone applied at the rate of 2 to 3 tons per acre would probably be of much benefit. Leguminous crops should be plowed under in connection with the use of lime.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Myatt silt loam:

*Mechanical analyses of Myatt silt loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423813.....	Soil.....	0.2	1.0	3.4	23.4	14.1	45.9	11.5
423814.....	Subsoil.....	.0	.7	2.9	21.9	13.5	43.4	16.9

OCHLOCKONEE FINE SANDY LOAM.

The Ochlockonee fine sandy loam consists of a brown fine sandy loam, with some rusty-brown mottlings, underlain at about 8 to 15 inches by bluish-gray or light-gray very fine sandy loam to fine sandy clay, mottled somewhat with pale yellow.

Yellowish loamy fine sand and fine sandy loam, grayish to light brown in the surface soil, occur on hummocks. There are also included some areas where there is not much change in color or texture within the 3-foot section. Here the soil is a brown to chocolate-brown loam, slightly heavier below a depth of 20 to 36 inches. In places the texture ranges to very fine sandy loam.

The Ochlocknoee fine sandy loam occurs along Okatoma and Bowie Creeks and along Leaf River, with some small patches along Dry Creek. The surface is quite hummocky, with many swales and depressions. The type occupies first-bottom land and is subject to overflow. It has better surface drainage and underdrainage than any other first-bottom soil. Except in depressions it is fairly well drained.

This type is not as extensive as some of the other first-bottom soils, and only a very small area is under cultivation at present. It supports a timber growth of magnolia, beech, "Cuban" pine, and sweet gum, with a dense undergrowth of ivy, star anise, and switch cane.

Where the type is under cultivation it is used mainly for cotton and corn. In favorable seasons cotton yields from one-half to three-fourths bale per acre and corn from 25 to 35 bushels.

Uncleared land of this type has an average selling price of about \$7 an acre. Cleared land averages in price about \$12.50 an acre.

The Ochlockonee fine sandy loam is one of the most productive soils in the Coastal Plain region where well drained and well cultivated. It can be reclaimed by deepening the stream channels and straightening their courses, and by the use of tile. Tile drainage of this soil in other areas of the South has so improved it that corn makes an average yield of 60 bushels per acre, and lespedeza 2 to 2½ tons. With the use of tile drains the sediments brought down by the streams are deposited upon the surface, and the overflow water sinks to the level of the tile before being carried away, so that where the land is tiled each overflow deposits a rich coating upon the surface, and the land is never eroded or washed by the overflows.

#### OCHLOCKONEE SILT LOAM.

The typical Ochlockonee silt loam consists of a brown to dark-brown, mellow silt loam, about 12 inches deep, passing into lighter brown silt loam with rusty-brown mottlings, which is underlain by a light-brown to yellowish-brown silty clay. There are some concretions in the lower subsoil. The subsoil often has a reddish-brown color, but in some places, as the more poorly drained areas, it is bluish gray. The reddish-brown variation resembles the Hannahatchee series, and the bluish-gray, the Lee series.

The Ochlockonee silt loam occurs along Leaf River and Okatoma, Oakohay, Bowie, Dry, and McKinnis Creeks. Along Dry and McKinnis Creeks it occupies broad bottom areas which are well drained, and inundated only during extremely high water, as the channels of these two streams were straightened in places by the first settlers in this region. Along the other streams it occurs as undeveloped bottom land. The surface is level, but more or less dissected by old stream channels and numerous small swampy spots filled with cypress. There are also small "lakes" or lagoons.



The type is subject to inundation, but owing to the depth and comparatively high gradient of the main channel the floods seldom last more than a few days. In the low depressions, however, the water may remain for some time.

The Ochlockonee silt loam is naturally one of the most productive alluvial soils in the county. It is probably the most extensively farmed bottom soil, and was one of the first to be put under cultivation. At the present time about 50 per cent of its total area is under cultivation. Practically all the type is cultivated along Dry and McKinnis Creeks. Where it is not farmed it supports a timber growth consisting of magnolia, beech, "Cuban" pine, longleaf pine, holly, sweet gum, white oak, ironwood, cypress, bay, and swamp maple.

The principal crops are corn, cotton, and oats. Sugar cane, cowpeas, velvet beans, soy beans, peanuts, and lespedeza are other important crops. Heavy yields of cotton were formerly produced, but this crop now gives low returns, on account of the ravages of the boll weevil. Fair yields, however, are produced when conditions are unfavorable to the weevil.

Corn yields from 20 to 30 bushels per acre under favorable conditions, oats 25 to 30 bushels, and lespedeza hay from 2 to 2½ tons. Velvet beans and other crops, although now of considerable importance, have only recently been grown. This soil is handled under the same methods as the other types of the county, except that crops are not planted as early as on the upland.

The ordinary price of improved land of this type is about \$15 to \$25 an acre.

The productiveness of this soil is very high, and it is admirably adapted to corn and grass. The undeveloped areas could be reclaimed after the merchantable timber has been removed by straightening and deepening the stream channels and by using ditches or tile drains. The stumps rot quickly under the moist conditions, and the cut-over land would be less expensive to free of stumps than some of the upland areas. Where small depressions occur in the cultivated land they should be drained with tile or ditches and the depressions thoroughly limed.

#### BIBB FINE SANDY LOAM.

The Bibb fine sandy loam consists of a grayish fine sandy loam, mottled with rusty brown, underlain at about 8 inches by a bluish-gray fine sandy loam with some yellowish and brownish mottlings. This extends to a depth of 20 to 25 inches, where it grades into a grayish fine sandy clay, mottled with yellow. There are some included areas varying considerably in texture and color.

The Bibb fine sandy loam occurs along Oakey Woods Creek, Station Creek, Blakely Creek, and other small streams. It occupies the first bottoms and is subject to overflows. The drainage is poor, and

the type is unimportant agriculturally. Practically none of it is under cultivation. It supports a growth of water-loving grasses, bay, gum, water oak, star anise, ivy, and switch cane, and is used mainly for pasture.

It would not be advisable to develop this type of soil at the present time, when there is so much land in the county that could be put under cultivation at less expense. However, a few small patches, where a heavy deposit of organic matter has accumulated, could be profitably cleared and put under cultivation. Lespedeza and Bermuda grass could be made valuable pasture and hay crops in cleared areas.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Bibb fine sandy loam:

*Mechanical analyses of Bibb fine sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
423831.....	Soil.....	0.3	2.4	3.7	37.7	13.1	37.8	4.8
423832.....	Subsoil.....	.4	1.9	3.3	31.5	13.5	33.2	15.9

#### BIBB SILT LOAM.

The Bibb silt loam to a depth of about 8 inches is a very light gray to mottled gray and yellowish or mottled gray and brownish, silt loam. This passes into bluish-gray silt loam, with some pale-yellow and, in places, rusty-brown mottling, and this in turn grades into a light-gray or whitish, compact silty clay containing small, black, soft oxide of iron concretions. In many instances the soil in the more clayey areas somewhat resembles putty, having a cold, clammy feel, due to lack of friability and of organic matter. When thoroughly saturated the soil becomes sticky; when dry the surface soil is rather firm, but not compact, the light, porous clods crushing under moderate pressure to a fine tilth. The type is sour and distinctly acid, as shown by the litmus-paper test. The light color and peculiar physical conditions are caused by poor drainage.

This soil occurs in the bottoms along Terrible, Big Swamp, and Bowie Creeks. The surface is uniformly flat, and the type lies only a few feet above the normal water level of the streams, being subject to frequent and protracted overflows.

Both the run-off and the underdrainage are poor. There is little chance for the escape of water except by evaporation or by very slow movement through the subsoil. The streams are sluggish, and slow to carry off the excess water after heavy rains.

None of this land is under cultivation, and its reclamation is unlikely under present economic conditions. The timber growth con-

sists mainly of sweet gum, "Cuban" pine, tupelo gum, swamp maple, ironwood, beech, white oak, and water oak. There is generally an undergrowth of ivy, star anise, and water-loving grasses.

The type is used mainly as pasture. The native grasses and lespedeza afford good grazing, and the type can probably be better used for this purpose than any other. On the better drained patches occurring in adjoining fields of well-drained soils it would probably be advisable to develop the type by drainage and applications of barn-yard manure and lime.

#### THOMPSON FINE SANDY LOAM.

The Thompson fine sandy loam consists of grayish fine sandy loam underlain at 4 or 5 inches by pale-yellow fine sandy loam, which at about 15 inches gives way to a mottled yellow and gray fine sandy clay. In some places there is encountered in the lower part of the subsoil a rather compact, impervious layer, which resembles the hardpan of the Bibb soils. In the southern part of the county, along the stream bottoms of Okatoma Creek and Oakey Woods Creek, the type grades into a fine sand.

The Thompson fine sandy loam occurs in the southern part of the county, principally along Okatoma Creek and Bowie Creek. It occupies the first bottoms of these streams and is subject to overflow. Drainage is in most places poor, as the compact, impervious substratum prevents the escape of water.

None of the type is under cultivation at present. Much of it is forested with pine, ivy, bay, star anise, and gallberry bushes. The soil is in need of better drainage and more organic matter. The drainage could be improved by straightening and enlarging the main stream channels, and by constructing lateral ditches.

#### SUMMARY.

Covington County is located in the southern part of Mississippi. It has a total area of 410 square miles or 262,400 acres. The county lies within the Gulf Coastal Plain. The topography in general is rolling, and drainage in most places is well established.

This area was first settled more than 100 years ago, the early settlers coming from the Carolinas and occupying the land adjacent to Dry Creek. The county was organized in 1819. The population has steadily increased, and in 1910 amounted to 14,328. The rural population is increasing, but a much larger population could be supported upon lands now in condition for farming. Large areas of cut-over land could easily be put under cultivation.

The Gulf & Ship Island Railroad traverses the county from northwest to southeast, affording transportation facilities for a large part of its area.

The winters are mild and the growing seasons long, favoring a widely diversified agriculture. The heat of the long summer season is tempered by winds from the Gulf of Mexico.

Agricultural development until within the last few years has been slow, but at present much of the cut-over land is being stumped and put under cultivation. Cotton is still the main money crop, but dairying and stock raising are fast taking the place of the former one-crop system. The milk is produced principally from locally raised cows, and the animals are fed almost entirely on home-grown feed stuffs, such as velvet beans.

Irish potatoes, sweet potatoes, watermelons, and cattle are shipped out of the county in carload lots, one small town shipping over 30 carloads of sweet potatoes in 1916. Fifty to sixty-five thousand dollars' worth of strawberries are shipped annually from one town.

There is much need for improvement in general farming methods. Among the needs are better drainage, deep plowing, systematic rotation, and better cultural methods.

The county includes three principal physiographic divisions, uplands, terraces or second bottoms, and first bottoms or present flood plains. The upland soils are of residual origin, and the terrace and first-bottom soils consist of alluvium deposited by the streams along their courses. Thirteen soil series are recognized in the county, including 20 different soil types.

The Greenville loam is adapted to a wide range of general farming. The turning under of green-manure crops would greatly improve the physical condition of this type.

The Orangeburg fine sandy loam is productive and adapted to a wide range of crops. It is considered an excellent peach soil. Care should be used in keeping this type well terraced to prevent erosion.

The Ruston soils are good all-around farming types where not too rough or sandy.

The Caddo silt loam is farmed to only a small extent. Probably the acreage application of 2 tons of lime would make this soil more productive of corn, cotton, oats, velvet beans, and grasses of all kinds. It is well adapted to use as pasture land.

The Susquehanna soils would be greatly improved by liming and the incorporation of organic matter.

The Cahaba, Amite, Kalmia, Leaf, and Myatt soils of the second bottoms or terraces are capable of producing good crops under certain conditions. The last three soils would be made more productive by draining, liming, and incorporating organic matter.

All the first-bottom or overflowed soils are in general need of better drainage. With the use of tile drains and the application of lime they could in most places be farmed to good advantage.

[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

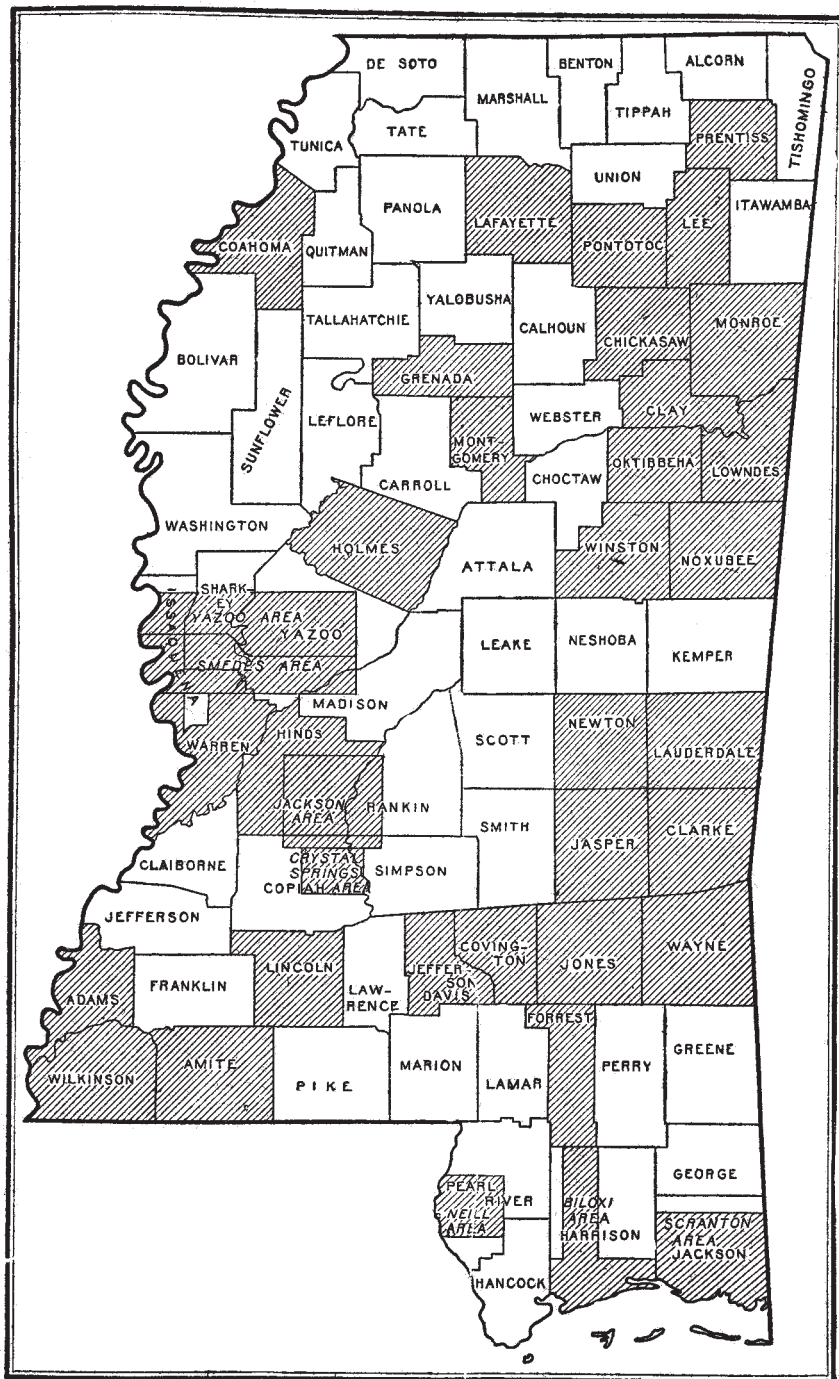
*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:*

"That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture."

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]





Areas surveyed in Mississippi.

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